REMARKS

Claims 1-73 were pending in the application. Claims 74-130 are added. Claims 1, 22, and 48 are the independent claims. Consideration of the amended application is respectfully requested.

The written description and claims are amended for improved clarity. New claims 74-130 are added to protect additional aspects of the invention. A check is enclosed herewith in payment of the fee for these additional claims. If the check is missing, or made out for an insufficient amount, please charge any deficiency to our deposit account, No. 501998, and notify us accordingly.

Respectfully submitted,

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Date

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE WRITTEN DESCRIPTION:

The paragraph beginning on page 17, at line 19:

In order to obtain good results from a scan, the field strength in the magnet gap must be sufficiently large, so that meaningful data can be provided. The diagnostic utility of scanning data increases with the field strength in the magnet gap, that is, within the working volume of the scanner. Thus, it is advantageous to maximize the [filed] field strength in the magnet gap, given certain physical constraints, such as magnet structure dimensions and availability of magnetic material. Many factors can affect the field strength in the magnet gap. For example, the strength, that is, the energy product BH of the permanent magnet, times the volume of the permanent magnet material, play a large part in determining the field strength in the magnet gap. While increasing the amount of magnetic material will certainly increase the field strength, size limitations on the magnet structure can limit the amount of magnetic material used. Obviously, obtaining better quality magnetic material will also cause an increase in field strength, but obtaining better material drives up the cost of the magnet structure. Certain design considerations can be applied, however, to increase the usable field strength, even while constrained by the quantity and quality of the magnetic material.

The paragraph beginning on page 23, at line 4:

The frame 106 includes first and second end plates 124, 126 connected to the respective magnet enclosures 112, 114, a connecting element 128 joining the end plates 124, 126, and first and second support gussets 130, 132, acting as braces between the

connecting element 128 and the respective magnet enclosures 112, 114. To provide sufficient stability, the gussets 130, 132 can be attached to the first and second end plates, 124, 126, [that] the magnet enclosures 112, 114, and the connecting element 128. Structurally, the frame 106 keeps the magnet assemblies 102,104 stationary and spaced at a selected distance. The structure of the frame 106 also maintains the relative orientation of the poles 108, 110, such that the pole faces 116, 118 are opposed and substantially parallel, as shown in Figs. 2 and 4. Strictly in respect of the structural requirements of the frame 106, the end plates 124, 126, connecting element 128, and support gussets 130, 132 are made of strong stiff material, such as metal. The support gussets 130, 132 preferably are made from a non-magnetic metal, such as aluminum. As shown in Fig. 5, the gussets 130, 132 can include gusset platforms 134, to provide additional stability in bracing the magnet assemblies 102, 104. Whether the end plates 124, 126 and connecting element 128 are made from a magnetic metal, and particularly from a ferromagnetic material, depends on the functionality required of these frame components, as described below.

The paragraph beginning on page 24, at line 22:

The first and second magnet assemblies 202, 204 include respective first and second poles 208, 210 and respective first and second magnet enclosures 212, 214. As shown in Figs. 7 and 8, the poles 208, 210 are disposed on opposing sides of the magnet enclosures 212, 214, such that faces 216, 218 of the poles [212, 214] 208, 210 are substantially parallel and facing each other. The magnet enclosures 212, 214 are filled with magnetic material, which is the magnetic mass that provides the magneto-motive

force of the permanent magnet. Each magnet enclosure 212, 214 has an opening through which the magnetic material can be placed into the magnet enclosure and taken out of the magnet enclosure. The magnetic material can take the form of, for example, discrete magnetic elements. These discrete magnetic elements can take any of various forms, such as that of bricks, that is, oblong rectangular shapes, or, as shown in the figures, thin, square, tile-shaped bricks. Alternatively, the discrete magnetic elements can be arcuately shaped, and stacked within the magnet enclosure to form a round magnetic mass. The interior of the magnet enclosures 212, 214 can be shaped to accommodate discrete magnetic elements of any shape. First and second covers 220, 222 are provided over the respective openings. The covers 220, 222 can be composed of discrete covering pieces, such as strips of material spanning the opening.

The paragraph beginning on page 26, at line 3:

The frame 206 includes first and second end plates 224, 226 connected to the respective magnet enclosures 212, 214, a first connecting element 228 joining first ends of the end plates 224, 226, and first and second support gussets 230, 232, acting as braces between the first connecting element 228 and the respective magnet enclosures 212, 214. The frame also includes a second connecting element 234 joining second ends of the end plates 224, 226. Structurally, the frame 206 keeps the magnet assemblies 202, 204 stationary and spaced at a selected distance. The structure of the frame 206 also maintains the relative orientation of the poles 208, 210, such that the pole faces 216, 218 are opposed and substantially parallel, as shown in Figs. 7 and 8. Strictly in respect of the structural requirements of the frame 206, the end plates 224, 226, first and second

connecting elements 228, 234, and support gussets 230, 232 are made of strong stiff material, such as metal. The support gussets 230, 232 preferably are made from a non-magnetic metal, such as aluminum. As in the previously-described embodiment, the gussets 230, 232 can include gusset platforms, to provide additional stability in bracing the magnet assemblies 202, 204. Whether the end plates 224, [126] 226 and first and second connecting elements 228, 234 are made from a magnetic metal, and particularly from a ferromagnetic material, depends on the functionality required of these frame components, as described below.

The paragraph beginning on page 27, at line 1:

Functionally, the end plates 224, 226 can act as flux collector plates. In such cases, the end plates 224, 226 are made from a magnetic material, preferably a ferromagnetic material, and a portion of each end plate 224, 226 facing the respective magnet enclosure 212, 214 is proximate to the magnetic material, and preferably is in contact with the magnetic material. This contact can be made either directly or through mutual contact with an interface element made of a magnetic material, such as a ferromagnetic material. Likewise, the connecting elements 228, 234 can function as [a] flux returns between the flux connector plates. In such cases, the connecting elements 228, 234 are made from a magnetic material, preferably a ferromagnetic material. The addition of the second flux return enables the fabrication of both flux returns from smaller pieces of metal.

The paragraph beginning on page 32, at line 20:

As shown in Fig. 13, the magnet structure 300 of the present invention can be arranged such that a first magnet assembly 302 is an upper magnet assembly, and a second magnet assembly 304 is a lower magnet assembly. Thus, according to this arrangement, the first and second frame ends 308, 310 are upper and lower frame ends, respectively. The spacers 312 rest on the lower frame end 310 and support the upper frame end 308. The [the] length of the spacers 312 determines the distance between the upper pole 314 and the lower pole 316, defining the magnet gap 326 therebetween. A footer 328 can be used to raise the magnet structure 300 off the ground, and to isolate the lower frame end 310 from magnetic elements that might be present in the ground, which could affect the homogeneity of the field produced by the magnet structure 300.

The paragraph beginning on page 34, at line 14:

The collector plate 330 is made of magnetic material, for example, ferromagnetic material, and provide a flux transmission interface between the permanent magnet insert 334 and the pole 314. A first side of the collector plate 330 faces the permanent magnet insert 334, and can be in direct contact with the magnetic material of the permanent magnet insert 334. Alternatively, a space can be present between the collector plate 330 and the magnetic material, and an intervening material can be present within this space. A second side of the collector plate 330 is in direct contact with the side of the pole 314 that is facing the permanent magnet insert 334. The geometry of the collector plate 330 is such that the side facing the pole 314 is substantially the same shape as the shape of the surface of the pole 314 facing the collector plate 330. Likewise, the side of the collector plate facing the permanent magnet insert 334 has substantially the same shape as that of

the facing surface of the permanent magnet insert 334. Thus, for example, if the pole surface facing the collector plate 330 is round, the surface of the collector plate 330 facing the pole 314 is also round. If the surface of the permanent magnet insert 334 facing the collector plate 330 is square, the surface of the side of the collector plate 330 facing the permanent magnet insert 334 is also square. Between its opposite faces, the cross-sectional shape of the collector plate undergoes a transition between the two face shapes, if necessary, to efficiently couple flux transfers between the permanent magnet insert 334 and the pole 314. The collector plate 330 also provides a transition in size between the permanent magnet insert 334 and the pole 314, if necessary. Alternatively, the collector plate 330 is designed physically such that it [matched] matches with the permanent magnet insert 334, and a collector interface, preferably made of ferromagnetic material, is disposed between the collector plate 330 and the pole 314 to provide the geometric transition described above.

The paragraph beginning on page 36, at line 21:

As shown in Fig. 15, the permanent magnet insert 334 provides a field that is generally directed toward the pole 314. In the example where the permanent magnet insert 334 is composed of individual magnetic bricks, each brick is arranged such that it provides a field component in the general direction 344 of the pole 314, and the cumulative effect of the individual fields is a main field directed toward the pole 314. The field produced by the main array 334 is suitable for use in scanning subject tissue in the gap 326, but could be more effective if directed, or focused, toward a more distinct target area within the gap 326. A secondary permanent magnet insert 342, for example,

composed of a second array of magnetic bricks, is provided for the purpose of directing the main field in this manner. For example, as shown, an array of blocking bricks 342 is arranged in front of the main array 334 (with respect to the pole 314) and outside a periphery of the pole 314. The blocking bricks 342 are arranged in an array such that each blocking brick contributes a field component in a direction 346 pointing away from the periphery of the pole 314 and toward a specific area of the pole 314. Thus, the top blocking bricks [242] 342 have the effect of directing the main field toward a specific location in the gap. The quantities and locations of the blocking bricks 342 can be determined such that the overall effect of the secondary field direction 346 produced cumulatively by the individual blocking bricks directs the main field toward a specific location in the gap, that is, focusing the main field to a desired volume within the magnet gap, effectively defining the working magnetic field volume. Defining the working volume in this manner makes more efficient use of the available field.

IN THE CLAIMS:

1. (Amended) A magnet structure, comprising:

a frame supporting first and second opposing permanent magnet assemblies;

wherein the frame includes

a base,

first and second extensions connected to the base and to the respective first and second opposing permanent magnet assemblies, and

first and second support structures supporting the respective first and second opposing permanent magnet assemblies with respect to the base; and

wherein the first and second opposing permanent magnet assemblies each include

an enclosure having an open end,

a pole, [face] disposed on the enclosure, having a pole face, and arranged such that [it] the pole face opposes [faces] the pole face of the other permanent magnet assembly,

a magnetic mass disposed within the enclosure, and

a cover over the open end of the enclosure.

2. (Amended) The magnet structure of claim 1, wherein the magnetic mass is a plurality of [bricks] discrete magnetic elements made from a first magnetic material.

3. (Amended) The magnet structure of claim [1] 5, wherein the enclosure is box-shaped.

4. (Amended) The magnet structure of claim [3] 2, wherein the discrete magnetic [mass is a plurality of] elements are bricks made from a first magnetic material.

5. (Unchanged) The magnet structure of claim 4, wherein the bricks are stacked so as to substantially conform to the shape of the enclosure and filling the enclosure.

6. (Amended) The magnet structure of claim 5, further comprising a brace connected between the cover and a first side of the enclosure on which the pole [face] is disposed.

7. (Amended) The magnet structure of claim 5, further comprising a brace connected between a first side of the enclosure, and a second side of the enclosure on which the pole [face] is disposed.

8. (Unchanged) The magnet structure of claim 4, wherein the bricks include main bricks oriented so as to direct a main magnetic field in a first direction, and bucking bricks oriented to direct a blocking magnetic field in a second direction.

9. (Unchanged) The magnet structure of claim 8, wherein the main bricks are disposed behind the respective pole face and direct the main magnetic field generally toward the respective pole face, and the bucking bricks are disposed to one side of an outside periphery of the respective pole face and direct the blocking magnetic field toward a center line of the respective pole face.

10. (Unchanged) The magnet structure of claim 8, wherein the main bricks are disposed behind the respective pole face and direct the main magnetic field generally toward the respective pole face, and the bucking bricks are disposed on two opposite sides of an outside periphery of the respective pole face and direct the blocking magnetic field toward a center line of the respective pole face.

11. (Unchanged) The magnet structure of claim 8, wherein

the main bricks are disposed behind the respective pole face and direct the main magnetic field generally toward the respective pole face, and

the bucking bricks include first bucking bricks and second bucking bricks, wherein

the first bucking bricks are disposed at a first side of an outside periphery of the respective pole face and direct the blocking magnetic field toward a first center line of the respective pole face, and

the second bucking bricks are disposed at a second side of the outside periphery of the respective pole face, adjacent the first side of the outside periphery of the respective pole face, and direct the blocking magnetic field toward a second center line of the respective pole face.

12. (Unchanged) The magnet structure of claim 8, wherein

the main bricks are disposed behind the respective pole face and direct the main magnetic field generally toward the respective pole face, and

the bucking bricks include first bucking bricks and second bucking bricks, wherein

the first bucking bricks are disposed at first and second opposite sides of an outside periphery of the respective pole face and direct the blocking magnetic field toward a first center line of the respective pole face, and

the second bucking bricks are disposed at third and fourth opposite sides of the outside periphery of the respective pole face, adjacent the first and second

opposite sides of the outside periphery of the respective pole face, and direct the blocking magnetic field toward a second center line of the respective pole face.

13. (Amended) The magnet structure of claim [2] 4, wherein an orientation of each said brick determines a direction of the magnetic field produced by said brick.

14. (Unchanged) The magnet structure of claim 13, wherein the orientation of each said brick is selected to direct a cumulative magnetic field produced by the plurality of bricks.

15. (Unchanged) The magnet structure of claim 14, wherein the orientation of each said brick is selected to direct a cumulative magnetic field produced by the plurality of bricks toward the respective pole face.

16. (Unchanged) The magnet structure of claim 14, wherein the orientation of a first quantity of the plurality of bricks is selected to direct a cumulative magnetic field produced by the first quantity of bricks generally toward the respective pole face, and the orientation of a second quantity of the plurality of bricks is selected to focus the cumulative magnetic field produced by the first quantity of bricks toward a particular area of the respective pole face.

17. (Unchanged) The magnet structure of claim 1, wherein the magnetic mass is selected from a group of materials consisting of rare earth metals.

18. (Amended) The magnet structure of claim [2] 4, wherein the magnetic material of the bricks is selected from a group of materials consisting of rare earth metals.

19. (Amended) The magnet structure of claim [2] 4, wherein dimensions of each said brick [is] are approximately 2 inches by 2 inches by 1 inch.

20. (Amended) The magnet structure of claim 1, wherein the frame further includes first and second slabs of magnetic material disposed on sides of the respective enclosures of the opposing permanent magnet assemblies opposite the sides of the respective enclosures on which the [pole faces] poles are disposed.

21. (Unchanged) The magnet structure of claim 1, wherein the first and second frame extensions are made from a magnetic material.

22. (Amended) A magnet structure, comprising:

a first permanent magnet mass;

a first pole, having a first pole face and disposed on the first permanent magnet mass;

a second permanent magnet mass;

a second pole, having a second pole face and disposed on the second permanent magnet mass; and

a frame connecting the first permanent magnet mass to the second permanent magnet mass, such that the first pole face is substantially opposite and facing the second pole face to define a magnetic field volume in a gap located between the first pole face and the second pole face.

23. (Unchanged) The magnet structure of claim 22, wherein magnetic fields produced by the first and second permanent magnet masses are directed toward the respective pole faces.

24. (Amended) The magnet structure of claim [22] 40, wherein the [first and second permanent magnetic masses] discrete magnetic elements are respective first and second pluralities of bricks made of magnetic material.

25. (Unchanged) The magnet structure of claim 24, wherein the first and second pluralities of bricks are made of magnetic material selected from group consisting of rare earth metals.

26. (Unchanged) The magnet structure of claim 22, wherein the first and second pluralities of bricks have geometries that allow a magnetic field direction for each said brick to be selected by physical arrangement of the brick.

27. (Unchanged) The magnet structure of claim 22, wherein the first and second pluralities of bricks are arranged so that a cumulative effect of individual field directions of the bricks is a magnetic field directed toward the respective pole face.

28. (Unchanged) The magnet structure of claim 24, wherein each said first and second pluralities of bricks includes main bricks oriented so as to direct a main magnetic field in a first direction, and bucking bricks oriented to direct a blocking magnetic field in a second direction.

29. (Unchanged) The magnet structure of claim 28, wherein the main bricks are disposed behind the respective pole face and direct the main magnetic field generally toward the respective pole face, and the bucking bricks are disposed to one side of an outside periphery of the respective pole face and direct the blocking magnetic field toward a center line of the respective pole face.

30. (Unchanged) The magnet structure of claim 28, wherein the main bricks are disposed behind the respective pole face and direct the main magnetic field generally toward the respective pole face, and the bucking bricks are disposed on two opposite sides of an outside periphery of the respective pole face and direct the blocking magnetic field toward a center line of the respective pole face.

31. (Unchanged) The magnet structure of claim 28, wherein

the main bricks are disposed behind the respective pole face and direct the main magnetic field generally toward the respective pole face, and

the bucking bricks include first bucking bricks and second bucking bricks, wherein

the first bucking bricks are disposed at a first side of an outside periphery of the respective pole face and direct the blocking magnetic field toward a first center line of the respective pole face, and

the second bucking bricks are disposed at a second side of the outside periphery of the respective pole face, adjacent the first side of the outside periphery of the respective pole face, and direct the blocking magnetic field toward a second center line of the respective pole face.

32. (Unchanged) The magnet structure of claim 28, wherein

the main bricks are disposed behind the respective pole face and direct the main magnetic field generally toward the respective pole face, and

the bucking bricks include first bucking bricks and second bucking bricks, wherein

the first bucking bricks are disposed at first and second opposite sides of an outside periphery of the respective pole face and direct the blocking magnetic field toward a first center line of the respective pole face, and

the second bucking bricks are disposed at third and fourth opposite sides of the outside periphery of the respective pole face, adjacent the first and second

opposite sides of the outside periphery of the respective pole face, and direct the blocking magnetic field toward a second center line of the respective pole face.

33. (Amended) The magnet structure of claim 24, further comprising first and second enclosures in which the first and second pluralities of bricks are respectively disposed, wherein the first and second enclosures are connected to the frame and to the respective first and second [pole faces] poles.

34. (Unchanged) The magnet structure of claim 33, wherein each said enclosure includes an open end for inserting and removing quantities of the respective pluralities of bricks, and a cover disposed over the open end.

35. (Amended) The magnet structure of claim 34, wherein each said enclosure further includes a brace connected between the cover and a first side of the enclosure on which the pole [face] is disposed.

36. (Amended) The magnet structure of claim 34, wherein each said enclosure further includes a brace connected between a first side of the enclosure, and a second side of the enclosure on which the pole [face] is disposed.

37. (Unchanged) The magnet structure of claim 22, wherein each said permanent magnetic mass includes a main magnetic mass providing a main magnetic field in a first

direction, and a focusing magnetic mass providing a main magnetic field in a second direction.

38. (Unchanged) The magnet structure of claim 37, wherein the first direction is normal to a plane generally defined by a shape of the pole face, and where the second direction is parallel to the plane generally defined by a shape of the pole face.

39. (Unchanged) The magnet structure of claim 22, wherein the magnetic mass includes magnetic material selected from group consisting of rare earth metals.

40. (Amended) The magnet structure of claim 22, wherein the first and second permanent magnetic [mass includes] masses include discrete magnetic elements.

41. (Unchanged) The magnet structure of claim 40, wherein the discrete magnetic elements include magnetic material selected from group consisting of rare earth metals.

42. (Unchanged) The magnet structure of claim 40, wherein a selectable orientation of each said discrete magnetic element determines a direction of the magnetic field produced by said discrete magnetic element.

43. (Unchanged) The magnet structure of claim 41, wherein the orientation of each said discrete magnetic element is selected to direct a cumulative magnetic field produced by the discrete magnetic elements toward the respective pole face.

44. (Unchanged) The magnet structure of claim 41, wherein the orientation of a first quantity of the discrete magnetic elements is selected to direct a cumulative magnetic field produced by the first quantity of discrete magnetic elements generally toward the respective pole face, and the orientation of a second quantity of the discrete magnetic elements is selected to focus the cumulative magnetic field produced by the first quantity of discrete magnetic elements toward a particular area of the respective pole face.

45. (Unchanged) The magnet structure of claim 44, wherein the particular area of the pole face includes the center of the pole face.

46. (Unchanged) The magnet structure of claim 44, wherein the first quantity of the discrete magnetic elements is disposed behind the respective pole face, and the second quantity of the discrete magnetic elements is disposed outside of an outer periphery of the respective pole face.

47. (Amended) The magnet structure of claim [22] <u>89</u>, wherein the frame further includes first and second slabs of magnetic material disposed on sides of the respective

first and second permanent magnet masses opposite the sides of the respective permanent magnet masses on which the respective pole faces are disposed.

48. (Amended) A magnet structure, comprising:

a frame, including first and second opposing frame ends and a plurality of spacers separating the first and second frame ends;

a first permanent magnet assembly, attached to the first frame end, including a first magnet enclosure, a first permanent magnet insert, and a first pole, having a first pole face and disposed on an end of the first magnet enclosure; and

a second permanent magnet assembly, attached to the second frame end, including a second magnet enclosure, a second permanent magnet insert, and a second pole, having a second pole face and disposed on an end of the second magnet enclosure.

49. (Amended) The magnet structure of claim 48, wherein each of the first and second magnet enclosures includes a retainer, and a support [connecting] attaching the retainer to the respective frame end, such that the respective permanent magnet insert is held between a first side of the retainer and the respective frame end, and the respective pole [face] is [attached] connected to a second side of the retainer.

50. (Unchanged) The magnet structure of claim 48, wherein the first and second frame ends are made substantially of iron.

51. (Unchanged) The magnet structure of claim 49, wherein each said retainer is made substantially of iron.

52. (Unchanged) The magnet structure of claim 48, wherein each of the first and second frame ends is shaped substantially like a cross.

53. (Unchanged) The magnet structure of claim 52, wherein the cross shape is supported by at least one gusset.

54. (Unchanged) The magnet structure of claim 52, wherein the spacers connect corresponding ends of the cross shapes of the first and second frame ends.

55. (Amended) The magnet structure of claim 48,

wherein the first and second magnet enclosures each include an open end, a closed end, and a sidewall, defining an inside space in which the respective permanent magnet insert is disposed, and

wherein the first and second magnet enclosures are each attached to the respective frame end such that the open end is in direct communication with the respective frame end, and the respective pole [face] is attached to the closed end.

56. (Unchanged) The magnet structure of claim 55, wherein each said inside space has a plan view that is shaped substantially like a rectangle.

57. (Unchanged) The magnet structure of claim 56, wherein the first and second frame ends are each shaped substantially like a cross, and the sides of each of the inside spaces are substantially parallel with arms of the respective cross.

58. (Unchanged) The magnet structure of claim 56, wherein the first and second frame ends are each shaped substantially like a cross, and the corners of each of the inside spaces are disposed on arms of the respective cross.

59. (Unchanged) The magnet structure of claim 55, wherein the first and second magnet enclosures are made substantially of iron.

60. (Unchanged) The magnet structure of claim 48, wherein the first and second permanent magnet inserts each include discrete magnetic elements.

61. (Unchanged) The magnet structure of claim 60, wherein the discrete magnetic elements are made of magnetic material selected from group consisting of rare earth metals.

62. (Amended) The magnet structure of claim 60, wherein the discrete magnetic elements have geometries that allow a magnetic field direction for each said discrete magnetic element to be selected <u>based on a physical orientation of the discrete magnetic elements</u>.

63. (Unchanged) The magnet structure of claim 62, wherein the discrete magnetic elements are arranged so that a cumulative effect of individual field directions of the discrete magnetic elements is a magnetic field directed toward the respective pole face.

64. (Unchanged) The magnet structure of claim 62, wherein the discrete magnetic elements include a first group of discrete magnetic elements arranged to have a magnetic field directed generally toward the respective pole face, and a second group of discrete magnetic elements focusing the magnetic field toward a particular area on the respective pole face.

65. (Unchanged) The magnet structure of claim 64, wherein the particular area on the respective pole face is the center of the pole face.

66. (Unchanged) The magnet structure of claim 64,

wherein the second group of discrete magnetic elements is disposed between the first group of discrete magnetic elements and the respective pole face and outside an outer periphery of the respective pole face, and

wherein the second group of discrete magnetic elements produces a magnetic field that has a direction substantially parallel to the pole face.

67. (Unchanged) The magnet structure of claim 48, wherein the first and second permanent magnet inserts each include bricks made of magnetic material.

68. (Unchanged) The magnet structure of claim 67, wherein the bricks are made of magnetic material selected from group consisting of rare earth metals.

69. (Unchanged) The magnet structure of claim 67, wherein the bricks have geometries that allow a magnetic field direction for each said brick to be selected by physical arrangement of the brick.

70. (Unchanged) The magnet structure of claim 69, wherein the bricks are arranged so that a cumulative effect of individual field directions of the bricks is a magnetic field directed toward the respective pole face.

71. (Unchanged) The magnet structure of claim 69, wherein the bricks include a first group of bricks arranged to have a magnetic field directed generally toward the respective pole face, and a second group of bricks focusing the magnetic field toward a particular area on the respective pole face.

72. (Unchanged) The magnet structure of claim 71, wherein the particular area on the respective pole face is an area including the center of the pole face.

73. (Unchanged) The magnet structure of claim 71,

wherein the second group of bricks is disposed between the first group of bricks and the respective pole face and outside an outer periphery of the respective pole face, and

wherein the second group of bricks produces a magnetic field that has a direction substantially parallel to the pole face.

74. (New) The magnet structure of claim 21, wherein the first and second frame extensions are made from a ferromagnetic material.

75. (New) The magnet structure of claim 21, wherein the first and second frame extensions are flux collector plates.

76. (New) The magnet structure of claim 21, wherein the first and second frame extensions are disposed in direct contact with the magnetic mass.

77. (New) The magnet structure of claim 20, wherein the first and second frame extensions are made from a magnetic material, and the first and second slabs of magnetic material provide contact between the first and second frame extensions and the respective magnetic masses of the first and second opposing permanent magnet assemblies.

78. (New) The magnet structure of claim 21, wherein the base is made from a magnetic material.

79. (New) The magnet structure of claim 78, wherein the base is made from a ferromagnetic material.

80. (New) The magnet structure of claim 78, wherein the base is a flux return.

81. (New) The magnet structure of claim 1, wherein the first and second support structures of the frame are made from a non-magnetic material.

82. (New) The magnet structure of claim 81, wherein the first and second support structures of the frame are made from aluminum.

83. (New) The magnet structure of claim 1, wherein the base of the frame includes a bore therethrough for receiving a limb of a subject of a magnetic field produced by the magnet structure.

84. (New) The magnet structure of claim 8, wherein the main magnetic field and the blocking magnetic field together define a magnetic field volume.

85. (New) The magnet structure of claim 84, wherein the defined magnetic field volume is an imaging volume that accepts patient anatomy for imaging.

86. (New) The magnet structure of claim 33, wherein the frame includes first and second end plates, respectively attached to the first and second enclosures, and a connecting element attached to the first and second end plates.

87. (New) The magnet structure of claim 86, further including first and second support structures, attached to the respective first and second enclosures and to the connecting element.

88. (New) The magnet structure of claim 87, wherein the connecting element is a first connecting element, and further comprising a second connecting element, attached to the first connecting element and to the first and second end plates.

89. (New) The magnet structure of claim 88, wherein the first and second end plates and the first and second connecting elements are made of a magnetic material.

90. (New) The magnet structure of claim 89, wherein the first and second end plates and the first and second connecting elements are made of a ferromagnetic material.

91. (New) The magnet structure of claim 89, wherein the end plates are flux collector plates, and the connecting elements are flux returns.

92. (New) The magnet structure of claim 89, wherein the first and second support structures are made of a non-magnetic material.

93. (New) The magnet structure of claim 92, wherein the first and second support structures are made of aluminum.

94. (New) The magnet structure of claim 89, wherein the first and second end plates are disposed in direct contact with the respective first and second pluralities of bricks.

95. (New) The magnet structure of claim 47, wherein the first and second end plates are disposed in contact with the respective first and second pluralities of bricks through the first and second slabs of magnetic material.

96. (New) The magnet structure of claim 22, further comprising first and second interface collectors made from a magnetic material, disposed between the respective first and second permanent magnet masses and the first and second poles.

97. (New) The magnet structure of claim 96, wherein the first and second interface collectors each include a first face disposed in contact with the respective permanent magnet mass, and a second face disposed in contact with the respective pole.

98. (New) The magnet structure of claim 97, wherein the second faces of the first and second interface collectors have a first shape that matches a shape of a contact surface of the respective poles.

99. (New) The magnet structure of claim 98, wherein the first faces of the first and second interface collectors have a second shape that matches a shape of a contact surface of the respective permanent magnet mass.

100. (New) The magnet structure of claim 99, wherein a cross-sectional shape of the first and second interface collectors changes in transition from the first shape to the second shape along a thickness of the respective interface collector.

101. (New) The magnet structure of claim 100, wherein the transition is smooth.

102. (New) The magnet structure of claim 96, wherein the first and second interface collectors each provide a flux transmission interface between the respective permanent magnet mass and the respective pole.

103. (New) The magnet structure of claim 99, further comprising first and second enclosures in which the first and second magnetic masses are respectively disposed,

wherein the first and second enclosures are attached to the frame, and

wherein the first and second interface collectors are attached to the respective first and second enclosures.

104. (New) The magnet structure of claim 103, wherein each said enclosure includes an open end for inserting and removing the respective permanent magnet mass, and a cover disposed over the open end.

105. (New) The magnet structure of claim 104, wherein the cover is made of a non-magnetic material.

106. (New) The magnet structure of claim 105, wherein the cover is made of aluminum.

107. (New) The magnet structure of claim 104, wherein the first faces of the first and second interface collectors have a surface area that is smaller than a surface area of a contact surface of the respective permanent magnet mass.

108. (New) The magnet structure of claim 107, wherein each said enclosure further includes a bracket attached to the cover and to the respective interface collector.

109. (New) The magnet structure of claim 108, wherein the bracket is made of a non-magnetic material.

110. (New) The magnet structure of claim 109, wherein the bracket is made of aluminum.

111. (New) The magnet structure of claim 107, wherein each said enclosure further includes a bracket attached to a sidewall of the enclosure and to the respective interface collector.

112. (New) The magnet structure of claim 111, wherein the bracket is made of a non-magnetic material.

113. (New) The magnet structure of claim 112, wherein the bracket is made of aluminum.

114. (New) The magnet structure of claim 28, wherein the main magnetic field and the blocking magnetic field together define a magnetic field volume.

115. (New) The magnet structure of claim 24, wherein dimensions of each said brick are approximately 2 inches by 2 inches by 1 inch.

116. (New) The magnet structure of claim 49, wherein each said support is made of a non-magnetic material.

117. (New) The magnet structure of claim 116, wherein each said support is made of aluminum.

118. (New) The magnet structure of claim 51, wherein each said retainer is a flux transmission interface between the respective permanent magnet insert and the respective pole.

119. (New) The magnet structure of claim 51, wherein each said retainer includes a first face disposed in contact with the respective permanent magnet insert, and a second face disposed in contact with the respective pole.

120. (New) The magnet structure of claim 119, wherein the second face of each said retainer has a first shape that matches a shape of a contact surface of the respective pole.

121. (New) The magnet structure of claim 120, wherein the first face of each said retainer has a second shape that matches a shape of a contact surface of the respective permanent magnet insert.

122. (New) The magnet structure of claim 121, wherein a cross-sectional shape of each said retainer changes in transition from the first shape to the second shape along a thickness of the respective retainer.

123. (New) The magnet structure of claim 122, wherein the transition is smooth.

124. (New) The magnet structure of claim 67, wherein dimensions of each said brick are approximately 2 inches by 2 inches by 1 inch.

125. (New) The magnet structure of claim 67, wherein each said permanent magnet insert is an array of said bricks having dimensions of 46 inches by 46 inches by 6 inches.

126. (New) The magnet structure of claim 48, wherein a distance between outside edges of the first and second frame ends is about 52 inches.

127. (New) The magnet structure of claim 48, wherein a distance between the first and second pole faces is between about 22 inches and about 24 inches.

128. (New) The magnet structure of claim 50, wherein the plurality of spacers are made of a magnetic material.

129. (New) The magnet structure of claim 128, wherein the spacers are flux returns.

130. (New) The magnet structure of claim 64, wherein the first and second groups of discrete magnetic elements together define a magnetic field volume.